GRENADA

REPORT

ON THE

AGRICULTURAL DEPARTMENT

FOR THE YEAR

1954.

P.R. AGRIC. DEPT GRENADA.

GRENADA.

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D. McIntyre	Clerk, Class III.
Mrs. M. Fletcher	Lady Clerk, Class III.
Mrs. U. Aird	„ „
Miss S. Lord	„ „
Miss H. Carter	Clerical Assistant Westerhall.

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B. Pitt	Junior „ „
C. Augustine	„ „ „
I. Ferreira	„ „ „
N. D. Nedd	„ „ „
D. O. Mahon	Foreman, Ashenden Cocoa Station.
J. Marshall	Foreman, Maran Cocoa Station.
R. Mark	Foreman, Boulogne Cocoa Station.
R. Lett	Propagator Attendant.
D. Fletcher	„ „
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N. J. Nedd	„ „

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Improvement of Land Settlement.

D. A. Rennie	Junior Agricultural Instructor.
D. Buxo	" " "
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COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Fisheries Improvement.

C. Grubbe	Fishery Officer.

COLONIAL DEVELOPMENT AND WELFARE SCHEME D.

Agricultural Development, Carriacou.

D. R. D. Wiles D.I.C.T.A.	Senior Agricultural Assistant.
M. John	Junior Agricultural Instructor.

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W. H. Hagley	Control Officer.
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J. A. Leid	"
L. Raeburn	"
S. Kent	"
Miss S. Lord	Clerical Assistant

REPORT OF THE DEPARTMENT OF AGRICULTURE GRENADA B.W.I. FOR THE YEAR ENDING 31ST DECEMBER, 1954.

SECTION I.

AGRICULTURE IN THE COLONY.

Weather Conditions.

1. Dry weather prevailed from February until early June when the rainy season set in. Heavy showers fell in July and affected fruiting of cacao to some extent.

2. Data from returning stations are to be seen in Appendix I.

Cacao Industry.

3. Cacao fruited late. The crop was a relatively poor one. Cacao exported was of good average quality.

4. Prices ranged from 56 cents per lb. to 88 cents per lb. the highest price offered during the period being 90 cents.

5. Exports during the year totalled 51,362 cwt. valued at $4,959,403.

TABLE I.

Export and Value of Cacao.

Year.	*Export (Cwt)*	*Value ($)*
1948 ..	52,200	2,529,770
1949 ..	48,482	1,749,550
1950 ..	40,227	2,434,634
1951 ..	48,504	3,576,116
1952 ..	54,178	3,537,395
1953 ..	61,128	3,852,773
1954 ..	51,362	4,959,403

Nutmeg Industry.

6. The crop was considered a good one though growers complained of the smallness of the advance 6 cents to 9 cents for green and 10 cents to 13 cents for dry. The total exports were slightly above those of the previous year's production.

7. Nutmegs delivered to the Association in 1954 amounted to 5,185,167 lbs. equivalent cracked and mace to 686,107 lbs equivalent cured.

8. The United States of America continues to be the largest importers of nutmegs and the United Kingdom the largest importer of mace.

9. Value of nutmegs, mace and nutmeg oil exported over the last seven years might be had from the subjoined Table :

TABLE II.

Quantities and values of Exports of Nutmegs, Mace and Nutmeg Oil.

Year.	Nutmeg (Cwt)	Mace (Cwt)	Nutmet Oil (lb.)	Total Value ($)
1948 ..	10,004	4,039	2,430	1,507,661
1949 ..	44,908	6,289	3,690	2,274,774
1950 ..	61,947	6,515	6,280	3,976,488
1951 ..	23,152	5,199	5,940	2,199,514
1952	44,607	6,886	3,140	2,334,987
1953 ..	37,082	7,505	10,260	2,328,894
1954 ..	48,881	7,439	4,050	2,935,227

Lime Industry.

10. This industry is not being extended to any appreciable extent and most of the plantings are replacements.

TABLE III.

Quantities and Values of Lime Oil and Juice (Raw) exported from 1950 are given hereunder :—

Year	Lime Oil (lb)	Lime Juice (Gals)	Total Value ($)
1950	4,799	28,611	52,555
1951	3,695	45,810	68 169
1952	3,945	128,080	91,807
1953	6,193	83,280	94,591
1954	10,270	1,600	64,600

Coconut Industry.

11. There was a temporary breakdown in the Tempe factory and copra had to be exported to Barbados. Exports amounted to 4,586 cwt. as against 2,716 cwt. for the previous corresponding period.

Banana Industry.

12. Interest is still manifested in the extension of this industry. All varieties of exportable bananas, e.g. gros mitchel, Giant, Lacatan, are cultivated. Exports amounted to 109,000 stems as against 30,000 for 1953.

Cotton Industry.

13. 1,140 bales of raw cotton were produced mainly in Carriacou and marketed through the Marketing Organisation of the department. Its value was $72,617.

Sugar Industry.

14. 26,358.7 tons of cane were converted by the Grenada Sugar Factory for the 1954 crop into 2,527.2 tons of sugar crystals.

SECTION II.

WORK OF THE DEPARTMENT OF AGRICULTURE.

Botanic Gardens.

15. The following plants were distributed from the Botanic Gardens :

Grafted Mangoes ..	..	434 plants.
Budded Citrus ..	..	625 „
Ornamental Plants	..	510 „
Other Economic	..	43 „

CACAO INDUSTRY IMPROVEMENT SCHEME.

Colonial Development and Welfare Scheme D 612.

(Summary by Mr. D. A. Perryman, D.I.C.T.A.)

CLONAL COCOA IN GRENADA.

16. The first field plantings of pure stands of clonal cocoa took place in 1944, when just over one acre of rooted cocoa cuttings were planted. The acreage planted slowly increased yearly as more planting material became available up to 1949, when a total of sixty-five acres were planted throughout the island. In subsequent years the annual replanting rate rapidly increased due to the greatly increased capacity of the propagators in use and also to improvements in the propagation technique. At the end of 1953, a total of seven hundred and thirty-seven (737) acres were planted throughout the island with clonal cocoa and it is estimated that this area shal be increased to over one thousand (1,000) acres at the end of 1954.

17. In the early years of this scheme to replant suitable areas with clonal cocoa, both the estates owner and the peasant, like most farmers when any new agricultural practice is being introduced, were very sceptical about this new form of planting material and very reluctant to plant rooted cocoa cuttings. Some of the more progressive estates were, however, encouraged to plant small plots, varying in size from one to two acres, in the parishes of the island, and these were used as demonstration plots. These plots also served the useful purpose of enabling observations to be carried out as to the conditions most suitable for the establishment, growth, development and production of the clones.

18. The fears of the estate owners and managers were soon allayed with the establishment and coming into bearing of the first planted clonal cocoa plots. The early fruitfulness of the clones and the greater number of pods produced compared to seedlings of similar age were the deciding factors in convincing them that it was a profitable proposition to replant their moribund seedling cocoa fields with clonal cocoa of high productivity. Their suspicions, that the root system of rooted cocoa cuttings did not penetrate as deep into the soil as that of seedling cocoa to anchor the plant, were dispelled when root systems of clones and seedlings of similar ages were shown side by side at the biennial agricultural exhibitions, where it was not possible to differentiate between the two.

19. The peasants' interest in clones was awakened at a later date as a result of observing the progress of the estate clonal plots, and they are becoming more and more interested.

The result of this general awakening of interest in the planting of clonal cocoa, by both estates and peasants, is that the present demand for plants far exceeds the supply. The existing scheme is geared to produce 150,000 rooted cuttings per annum, the equivalent of approximately 300 acres. Requests, however, for clones for planting in 1955 amounts to 14,500 rooted cuttings, the equivalent of approximately 70 acres. It is of interest to note that over 60% of the applications for clones were received from peasants.

20. The scheme for the improvement of the cocoa industry of the colony does not only involve the propagation and distribution of clonal plants, but also includes an investigation programme. Clonal trials for the testing of the seventy locally made selections, and varietal trials with local and introduced clones from other West Indian colonies have been laid down. Other experiments include manurial and cultural trials with clonal material on the representative soil types of the colony.

21. The history of the rapid decline of the cocoa industry in Grenada is of great interest as it adversely affected the economy of the island.

Production between 1907 and 1920 averaged about 5,000 tons (60,000 bags of 200 lb. each). The highest production of 6,300 tons was recorded in 1908. During the ten year period from 1921 to 1930 production averaged 4,100 tons per annum, and dropped to 3,580 tons during the next ten year period. In the period 1940 to 1950 the next decade, an average of 2,660 tons was produced. Finally the average production for the period 1951 to 1953 was 2,730 tons. The crop for 1954 was 2,568. It is of interest to observe that production is once more on the increase.

22. The decline in production has resulted from the combined effect of several factors. It would be difficult and perhaps impossible to assess the relative influence of these factors on the decline in production.

23. The displacement of cocoa areas by nutmegs and the consequent reduction in acreage under cocoa must, however, be held responsible for contributing to a large measure to the decline in production. The result of the low average prices which prevailed during the period between the two World Wars, when cocoa growers could not afford to cultivate at the high level, which Grenada was noted for, has resulted in loss of vigour in the trees and a decline in yield. These conditions were further accentuated during the second World War by shortage of labour and lack of adequate supplies of both pen manure and imported fertilisers. The cocoa trees were, therefore, less able to repair and overcome the damage caused by the cocoa beetle, (*Steirastoma breve*,) which is a serious pest of cocoa in Grenada. The conditions of the trees in many areas deteriorated rapidly under beetle attack, leaving many areas of derelict cocoa.

24. In the past when cocoa was planted no particular precaution was taken against soil erosion which has undoubtedly contributed towards the present poor condition of many of the soils in which cocoa is grown throughout the island. There comes a time in the life of the cocoa tree when its ability to yield begins to wane. A great number of cocoa trees in the colony has reached this age. There can be no question of the fact that old age of trees is responsible in a large measure for the decline in crop production. Finally within recent times (1949) Witches' Broom disease (*Marasmius perniciosus*) was discovered, and has no doubt taken its toll on production and presents a menace to the industry if not kept in check.

25. As a result of the rapid decline of cocoa production in the colony, caused by factors outlined above, in 1938 the cocoa producers of the colony petitioned the Government to assist them to place and maintain the cocoa industry on a stable and sound economic basis. This petition was the forerunner of the existing Cocoa Industry Improvement Scheme, which came into effect in 1946, with the main objective to increase the productivity of the colony's cocoa industry by a process of replacing existing old cocoa, in suitable soils, by means of a system of complete replanting, with clones of high-yielding strains.

26. It is heartening to record that the high prices for cocoa beans which the producer has been enjoying over the past few years has stimulated more intensive cultivation not only to old seedling cocoa fields but also to the more recently planted clonal fields. The application of imported fertilizers to cocoa cultivations, which was once looked upon by the grower as something artificial, or as a stimulant analogous to a tonic for human beings, and who thought that regular and heavy dressings would have harmful effects on the cocoa tree, is now becoming a wide spread practice among both estate owners and peasants. The imports of fertilizers during the past few years has, therefore, increased considerably.

27. The estimated area under cocoa throughout the colony is 15,000 acres, approximately 10,000 acres and 5,000 acres under estate management and peasant holdings respectively. At the existing rate of replanting 300 acres per annum, it will take fifty (50) years to replant this acreage. It is proposed, however, in view of the great increase in demand for plants, to increase production of rooted cocoa cuttings to 250,000 plants a year, the equivalent of approximately 500 acres.

28. Production from some of the better managed estate clonal plots 7 to 9 years old, and which vary in size from one to two acres, has averaged 1,600 pounds of dry cocoa per acre for the past two years. The overall average production of estate plots varying in age from 5 to 10 years is about 1,000 pounds of dry cocoa per acre. The present estimated total production from clonal plantings throughout the island is 75 tons or 900 bags of 200 pounds each.

29. The island's average production is approximately 400 pounds of dry cocoa per acre and it is contemplated that the island average production for clonal cocoa shall increase to 1,000 pounds per acre, or double the present average production from seedling cocoa.

30. The importance of the Cocoa Industry Improvement Scheme to the economy of the island cannot be over-stressed as indicated by the review given above. It is obvious that production should steadily increase and reach its former level when most of the existing old seedling cocoa has been replaced by clones. The intensive programme of research work being carried out by the Cocoa Research Scheme at the Imperial College of Tropical Agriculture in Trinidad, which includes the breeding of productive clones resistant or immune to the more serious cocoa pests and diseases, it may be possible to achieve this target production at an earlier stage.

31. The resuscitation of the banana industry in Grenada, based on the planting of Lacatan banana varieties for export will materially assist, in a large measure, the rehabilitation of the cocoa industry. Cocoa growers are being encouraged to grow Lacatan bananas as nurse shade for clonal cocoa, and the revenue that will be derived from the sale of bunches shall greatly assist cocoa growers, to defray a great portion of the expenditure that will incur in establishing clonal cocoa.

32. Cocoa today is considered one of the most favoured world's primary commodities and because the demand for raw cocoa exceeds production, and there is every indication that world consumption is expected to increase, it may be assumed that reasonable and economic price levels for cocoa are assured for sometime to come.

33. In conclusion, therefore it may be said that as a result of extensive clonal plantings the cocoa industry of Grenada is on the road to recovery, and providing that unforseen circumstances do not adversely affect the programme for the rehabilitation of cocoa growing areas with clones, it is reasonable to expect that this industry which is vital to the economy of the island shall, in the not too distant future, even surpass its former level.

REPORT ON SOUTH GRENADA DISTRICT.

(By Mr. C. M. Leys, Agricultural Assistant).

Westerhall Agricultural Station.

34. During the year the activities on this station were conducted by the Agricultural Assistant in charge, assisted by Mr. J. E. Carter, Foreman. The clerical work was carried out by Miss H. Carter, Clerical Assistant.

Soil Conservation.

35. Contour farming including barriers, chain ridges, were at all times maintained and demonstrated. During the month of November when there was every heavy rains most of the drains got filled but it was a pleasing feature to see how very little soil erosion took place on the station.

Food Crops.

36. *Yams.*—Two varieties were planted out for demonstrational purposes. The plot was divided into two sections, one section got Farm yard manure plus green manure, one got Artificial manure plus mulch. The size of the plots were one third of an acre. Pen manure was applied at the rate of 10 tons per acre. Artificial manure—suplhate of amonia 6 cwts. to the acre, mulch 10 tons to the acre. This crop has now been reaped and the following is the result from the plot planted with pen manure and green manure :—960 lbs. Amount planted 400 lbs. From the plot planted with Artificial manure and mulch :—754 lbs. : 400 lbs. planted. During the month of November we had heavy rainfall, accompanied by heavy wind, which did a fair amount of damage to the crop.

37. *Sweet Potatoes.*—Owing to very heavy rainfall during the month of November, this crop gave very poor returns. From one third of an acre only 48 lbs. were reaped.

38. *Manioc.*—A permanent manurial experiment is laid down on the station to run for three years. Object: to investigate the manurial requirements of soils in relation to this crop. This experiment is now in its 2nd year.

39. *Pigeon Peas.*—The return from this crop was very poor. Due to the bad weather condition only 43 lbs. were reaped from one third of an acre.

40. *Canes.*—From a plot of 19 acre planted for fodder, very little was used for feeding animals due to the fact that the rainfall was good throughout the year and fodder grass was plentiful. From this acreage 44,700 lbs. were sold to Woodlands Sugar Factory, which brought in a revenue of $181.99.

Fodder Crops.

41. Four varieties of sorghum were planted out as follows —Black Millet, Grant Sorghum, Columbus grass and round type Sorghum. These were cut, chaffed and stacked in the silo for making silage.

42. *Guinea Grass.*—This grass was further extended in the pasture and with the application of Farm yard manure, has stood up very good.

43. *Pen Manure.*—Pen manure was made continuously from compost stacked contiguous to the livestock buildings. This was utilized in the grass field and growing of crops.

Visitors.

44. Quite a number of parties visited the station during the year, also small and large farmers, and were shown around and the different phases of work explained to them.

Report of District Work for the Year 1954.

STAFF.

45. During the year the work of the district was carried out by the Agricultural Assistant, who was assisted by Junior Instructor Rennie. Due to a shortage of staff during the year there was a great set back in Soil Conservation work.

Soil Conservation.

46. The demand by peasant farmers for contour drains throughout holdings continue to be good, and with the planting of Lacatan bananas the demand will be greater this year.

47. Work carried out during the year under review are as follows :—

Estates :—	No. of Estates ..	6
	No. of lines	38
	Length of lines ..	5,640 feet
	Area affected ..	10½ acres.

Peasants Holdings :—

No. of holdings ..	16
No. of lines	46
Length of lines ..	7,846 feet
Area affected ..	16¼ acres.

48. Most of these lines were laid down through plots being cultivated in food crop, while the others were run through lands being prepared for clonal cocoa.

49. 12,804 feet of contour drains were dug during the year.

Crop Progress.

50. *Canes.*—Weather condition for the greater part of the year was good for canes, therefore, there should be a fair return to farmers this year.

51. *Corn and Peas.*—The season throughout has been mainly poor for these crops and although a fair amount has been planted out by farmers, very poor returns have been received.

52. *Cocoa and Nutmegs.*—The cocoa crop gave a fair return, and Nutmeg was good throughout.

53. *Bananas.*—Quite a few of the estates around have been planting Lacatan bananas, also peasant farmers. This crop shows ready signs of progress, but in most areas the young fields have been affected by Leaf Spot disease. Some estates have resorted to spraying with mixture.

54. *Coconuts.*—This crop in some areas gave very good returns due to the drought, but on some estates contour drains were dug through fields and then filled up with husks, these fields have continued to show signs of progress. Other estates throughout the area have now resorted to this method.

Livestock.

55. The care and management of Livestock throughout shows marked improvement. Farmers have been encouraged to build sheds for their animals; this has been done with the result that better animals have been reared, also better manure has been made.

REPORT ON WEST GRENADA DISTRICT.

(By E. S. Holgate, Agricultural Assistant.)

Mt. Moritz Agricultural Station and District II.

56. *Weather Conditions.*—The total rainfall recorded at the Mt. Moritz Agricultural Station for the year was 99.63 inches. This amount exceeded the rainfall of the previous year by 18.73 inches. For the last six months of the year the rainfall was 78.84 inches, an average of 13.24 inches per month. This unusual weather made weed control a problem, and in addition, adversely affected certain crops. The heaviest precipitation for a day was 9.15 inches, recorded on the 27th November. The record rainfall month for the year was November, during which 28.34 inches of rain fell, 19.74 inches of which fell in eight consecutive days from the 20th—27th.

Work on the Agricultural Station.

57. *Soil Conservation.*—This included mainly the maintenance of existing contour trenches, run-off drains, barriers and windbreaks. Three hundred and twenty (320) feet of new contour trenches were opened, four lines of stone barriers repacked and a line of windbreak established.

58. *Food Crops.*—An area of 5.18 acres, comprising plots ranging in size from 0.03 to 1.00 acre, was planted in food crops such as yams, tannias, sweet potatoes, etc. The area planted this year was 0.85 acre more than the previous year.

59. *Cocoa.*—The small plot of clonal cocoa on this station was maintained in good condition throughout the year. Supplying of the section planted in 1953, was affected. A number of plants in this plot started fruiting during the year.

60. *Coconut.*—The yield of the resuscitated coconut trees showed a marked increase over that of the previous two years. Resuscitational work was effected in 1952, in which year 472 dry nuts were produced as against 821 in 1953 and 1,922 for this year.

61. *Sugar Cane.*—Harvesting of the plant crop was done in January, and from an area of 0.81 acre 34.93 tons of canes were obtained, which is equivalent to a yeild of 43 tons per acre. The crop which is the first from this station, was sold to the Grenada Sugar Factory. Owing to the difficulty encountered in conveying canes from this field to a convenient spot for trucks, thus involving high labour costs, it was decided to lay out a new plot in a more accessible spot. The new plot was established.

62. A few varieties of sugar-cane were planted in separate plots with the object of keeping them distinct for multiplication and distribution. The varieties planted were :—B-34104, B-37161 B-37172, B-4098, B-41211, B-4362, B.-45151,B-4744, B-47419.

63. *Citrus.*—The small citrus orchard established during the previous year was maintained in good condition. Spraying of plants with certain insecticides and fungicides for the control of scale insects and Sooty Mould (Black Blight) was carried out with beneficial results.

64. A newly introduced item to the station's programme was the propagation of citrus plants. During the year under review a citrus nursery was established and 1,500 seville orange seedlings were transplanted to nursery rows in early July; budding of which began during late September. At the end of the year, there were 1,034 budded plants in the nursery as follows :—Grapefruit (Marsh) 845, Valencia Orange 105 and Navel Orange 84.

These should be ready for distribution in May, 1955. Over 10,000 seville orange seeds were sown, in order to provide stock for budding next year.

65. *Bananas.*—The two plots of bananas planted in the previous year made excellent progress. The appearance of these plots attracted the attention of nearly all visitors to the station during the year. The plots proved such an incentive to farmers in the vicinity that there were continuous requests from them for banana plants. Three hundred and forty-five (345) stems of fruit were harvested for the year, of which two hundred and eighty-nine (289) were sold for export.

66. One of the plots was severely affected by Cercospera Leaf Spot, but this was effectively controlled by regular spraying with Bordeaux mixture.

67. *Other Crops.*—Corn, pigeon peas, black-eye peas and market garden vegetables such as, lettuce, cabbage, cauliflower and tomatoes were grown during the year; but yields, although fairly good would have been better, had it not been for adverse weather conditions.

68. *Crop Return :*—The following is a table of the crop return for the year :—

Crops.	Quantity Reaped	Rate	Estate Value.	Remarks.
Lisbon Yams ..	12,173 lbs.	6 & 7 c.	798.95	
Moonshine Yams ..	6,217 „	5 c.	310.85	
Guinea Yams ..	223 „	6 c.	13.38	
Sweet Yams ..	1,695 „	4 c.	67.80	
Atoutemps Yams ..	275 „	6 c.	16.50	
Cutam Yams ..	350 „	5 c.	17.50	
Tannias	450 „	6 c.	27.50	
Sweet Potato ..	3,203 „	5 c.	160.15	
Cassava	3,340 „	1½ c.	50.10	
Sugar-cane ..	34.93 tons	—	372.70	
Pigeon Peas ..	365 lbs.	16 c.	58.40	
Bananas	345 stems	—	440.94	
Cow Pea	157 lbs.	20 c.	31.40	
Black-eye Pea ..	64 „	20 c.	12.80	
Cauliflower ..	12 „	24 c.	2.88	
Cabbage	102 „	16 c.	16.32	
Tomato	473 „	28 c.	132.44	
Lettuce	156 head	4 c.	6.24	
Nut Eddoes ..	150 lbs.	6 c.	9.00	
Coconuts	1,922 nuts	3 c.	57.66	
Banana Suckers ..	424	12 c.	50.88	
Corn (dried) ..	2,517 lbs.	6, 7 & 8 c.	170.44	
Corn (Green) ..	151 ears	3 c.	4.53	
	Total value ..	..	$ 2,829.36	

69. *Fodder Crops :*—There was an adequate supply of fodder throughout the year. A plot approximately one acre in area, which was being cultivated in food crops since the inception of the station, was planted with fodder grasses. All varieties flourished well during the year. Elephant Grass and Black Millet continued to be the most outstanding varieties on the station.

Manuring.

70. *Pen Manure :*—Over 30 tons of this manure were obtained from livestock pens, and this was advantageously used in certain plots.

71. *Green Manure :*—Crops of leguminous plants (Cow and Black-eye peas) grown in a section of the banana plot and proposed citrus and corn plots, were turned under just before flowering, as green manure.

72. *Inorganic Manures :*—Periodical applications of artificial fertilizers (mainly N, P & K) were given to certain crops. Mixing of the fertilizers to meet the requirements of various crops, was done on the station.

73. *Distribution of Planting Materials :*—There were continuous requests for various types of planting materials and supplies were made from time to time. The materials distributed during the year, included the following :—yams (several varieties), sweet potato, corn, cassava, tannias, eddoes, banana suckers, pulses e.g., cow and black-eye peas, sugar-cane and fodder grasses.

74. *Plant Introduction :*—The only new plants introduced during the period under review were Crotalaria anagyroides—from Costa Rica and sugar-cane plants of variety B-41211, from Barbados.

75. *Control of Pests and Diseases :*—This operation was given strict attention during the year. Spraying of bananas with Bordeaux mixture for the control of Cercospera Leaf Spot, was carried out at regular intervals. Citrus plants were sprayed with oil emulsion and Bordeaux for controlling scale insects and fungus diseases. Corn plants were dusted with Agrocide for checking and preventing Laphygma infestation. Early and late blight of tomatoes were controlled by the use of Perenox, as a spray.

76. *Mechanical Cultivation :*—A small Gem Rotavator was hired from Messrs. Hankeys Ltd. for a period of 3½ days, for use on the station. The Agricultural apprentices were taught to operate this implement and did a very good job with it. The following table shows the amount of work done by the Rotavator and the comparative cost if it were done by manual labour :—

No. of hours Worked	Nature of Work done	Area	Cost if done by Manual labour
8	Ploughing land and burying weeds ..	20,520 sq. ft.	$ 20.50
2	Pulverising land previously forked ..	4,975 „	$ 2.40
8	Inter-tilling banana plot (pulverising soil and destroying weeds) ..	19,935 „	$ 16.20
18		45,430 sq. ft.	$ 39.10

77. Expenditure on the Rotavator including cost of hire, fuel and operating was $25.17. By the use of the Rotavator instead of manual labour, a saving of thirteen dollars and ninety three cents ($ 13.93) was effected.

Experimental Work.

78. *Permanent Manurial Experiment :*—Third and final crop of corn under this experiment, was harvested in January of the year under review. Analyses of the results showed that the only significant effect on the crop was due to Nitrogen. A full report of this experiment shall be published at a later date.

79. *Randomised Mulching Trial :*—The crop (tannia) planted in this trial was harvested on the 9th February, 1954 and the results were as follows :—

Block No.	Crops.	Treatment & Yield. Control No Mulch	Kus-Kus Mulch	Gliricidia. Mulch.
1	Tannia.	13 lbs	20 lbs	38 lbs.
2	„	12 „	48 „	31 „
3	„	10 „	16 „	50 „
	Totals ..	35 lbs.	84 lbs.	119 lbs.

80. As in previous trial in which cassava was used as the indicator crop, the highest yield was obtained from gliricidia-mulched plots. Observations made during the vegetative period revealed that plants in plots mulched with gliricidia were healthy and vigorous, with a rich green appearance, while plants in plots with kus-kus mulch presented a yellowish appearance and growth was comparatively poor. Growth in control plots was very poor. The plots were prepared and planted with nut eddoes.

81. *Sweet Potato Variety Trial :*—This trial was carried out with the object of determining the higher yielding varieties of the eight grown on the station. The results of this trial showed that the V-14 variety is the most outstanding, and gives a yield of up to 7,527 lbs. per acre, with the David and Caroline Lee next in line, yielding up to 4,632 lbs. and 2,622 lbs. respectively. No manurial treatment was given to plants in this trial.

82. *Slanting versus Erect Lacatan Banana Trial :*—Two small plots containing thirty four (34) plants each, were planted with lacatan on the 15th January, 1953. In one plot, the plants were set upwright in the holes, and in the other they were planted in a slanting position. Growth rate was good in both plots but the plants set on the slant grew taller than those planted erect, and started fruiting earlier. The following is a table giving data on fruits reaped from both plots during the year.

Plot.	No. of Stems reaped.	Total Weight.	Average. Weight.	Means Grade.	Yield in Count bunches.
Slanting ..	67	1,599 lbs.	23.8 lbs.	6.7	39⅔
Erect ..	53	1,270 lbs.	24.2 lbs.	6.7	50

83. *Lacatan Banana Spacing Trial :*—The trial was designed to investigate the yield of the variety at different spacings. The plot planted 10 ft. x 10 ft. contains 102 stools and from this 183 stems of fruit weighing 4,208 lbs. were harvested for the year, as against 61 stems weighing 1,325¾ lbs. from the 8 ft. x 8 ft. spacing which contains 97 stools.

84. Leaf Spot was very severe in the 8 ft. x 8 ft. plot and sixteen plants with fruits were completely destroyed by this disease. It seemed as if the severity of the disease was due mainly to the fact, that the leaves of separate plants were always in contact with one another, owing to the close spacing. Leaf Spot infection in the 10 ft. x 10 ft. plot was very low.

85. *Lacatan Gros Michel Comparison Trial.*—Nearly all the plants in the Gros Michel plot were affected by Panama Disease, and as a result only twenty (20) stems of fruit were harvested from this plot during the year. Panama Disease was so severe on this variety, that it was decided to destroy all the plants and have the plot replanted with lacatan. On the other hand, the lacatan plot planted for comparison with the gros michel gave very good returns.

Livestock.

86. *General Notes :*—On the 1st January, 1954, the following animals were on the station :—

1 Grade Jersey bull,
1 „ cow,
2 „ heifers,
1 „ cow calf,
1 South African Woolless Ram,
1 British Alpine Buck,
2 Grade Large Black boars,
2 Donkeys (a Jenny and a Jack),
19 Rhode Island Red fowls.

87. The animals were maintained in a healthy condition during the year. Strict attention was paid to sanitation and other forms of management. Grazing facilities were good and fresh succulent fodder was available, throughout the year.

88. *Bitrhs :*—Three (3) cow calves were born during the year, as follows :—

One (1) to the heifer "Solitaire's Pearl" (first calf) 24.2.54.
One (1) to the cow "Nelly" on the 29.5.54.
One (1) to the heifer "Nancy's Mary" on the 6.7.54. (first calf).

89. *Deaths :*—The South African Woolless ram "Bimshire", and two Rhode Island Red fowls died.

90. *Sales :*—A grade Large Black boar and three fowls were sold.

91. *Transfers :*—The following transfers were effected during the year :—the Grade Jersey bull "Buttercup Lad", Grade Jersey heifer "Solitaire's Pearl" and a cow calf were transferred to Westerhall Agricultural Station, while two cows (Vienna and Matilda) and the Grade Jersey bull "Chieftain" were received from Westerhall.

92. *Services :*—There were only twenty-nine (29) services by stud animals on the station, as follows :—Buck 15, Boar 13 and Ram 1. The first calf heifer "Solitaire's Pearl" was artifically inseminated on the 15.6.54.

93. *Milk Production :*—The milk production for the year was 8,443 lbs. This shows an increase of over 90% on the previous year's production, which was only 4,372 lbs.

94. *Egg Production :*—The number of eggs collected for the year was 1,537.

95. *Buildings :*—Minor repairs were done to the Agricultural Assistant's, Foreman's and Apprentices' quarters and the office and store-room. Repainting of the Agricultural Assistant's and the Foreman's quarters was also effected.

96. *Water Supply :*—The pipe line from the storage tank was extended 525 feet for the purpose of conveying water to the newly established citrus nursery and vegetable plot.

Miscellaneous.

97. *Apprenticeship Training :*—Four apprentices and a school teacher who was permitted to undergo training as an apprentice, successfully completed a one year training course in agriculture at the end of September. During the course of training, the apprentices were sent to Boulogne Station and Westerhall Livestock for short periods, where they received training in cocoa propagation and cultivation and animal husbandry, respectively.

Four new candidates were selected for the 1954-55 course which commenced in October.

98. *Visitors.*—Visitors to the station during the year included Dr. Harvard Dulcos of the FAO division of the United Nations Organisation, Mr. Arnott, Lecturer at the Eastern Caribbean Farm Institute, the staff and pupils of the St. Luke's Anglican school and members of the St. Andrew's Peasants Improvement Association.

AGRICULTURE IN THE DISTRICT.

Permanent Crops.

99. *Cocoa :*—This crop still retained its place as the leading one in this district and a very good crop was harvested. The area under cocoa was considerably increased as a result of the establishment of new fields. Preparation of plots for next year's planting was effected.

100. *Nutmeg :*—This crop is gradually losing popularity and in some areas nutmeg trees were destroyed, and bananas and cocoa planted in their place.

101. *Bananas :*—With the development of an export trade, this crop has become very popular among planters, and the industry made rapid progress during the year. A fair amount of fruits was supplied from this district for export.

102. *Citrus :*—Limes and other varieties of citrus were produced in large quantities.

103. *Coconut :*—Trees in the district maintained a healthy condition and produced heavily.

104. *Sugar-Cane :*—A very good crop was harvested. Only a small quantity of the canes produced in this district was sold to the Grenada Sugar Factory as the bulk of it was manufactured into wet sugar by small holders who own mills.

105. *Food Crops :*—There was an abundance of food crops throughout the year.

Agricultural Extension and Advisory Work.

106. *Soil Conservation :*—A fair amount of work in this direction was achieved during the year under review. On the holdings of 29 peasants 10,276 feet of contours were established, while 18,677 feet were laid on 8 estates. In addition to the above 210 feet of contours were established in two school gardens.

107. *Demonstration Plot :*—The demonstration plot established on the holding of Mr. Kenneth Jones, at Grand Roy, was maintained in excellent condition during the year. The work demonstrated on this plot is being copied by quite a number of peasants in that area, and soil conservation work has been carried out on the holdings of over 31 peasants in the vicinity.

108. *Rat Extermination Campaign :*—This campaign, which covered a period of one month was conducted during November. The last week of October was propaganda week and during that period the campaign was given wide publicity. There was house to house distribution of the bait, by assistants who were employed for the purpose. These assistants also supervised the setting of the bait and carried out periodical inspection. The campaign was very successful in this district.

109. *Lectures and Demonstrations :*Three lectures were given to members of the Concord Progressive Club, the topics of which were, respectively, Banana, Tomato, and Cabbage Cultivation. Other lectures given during the year included one to a group of Police Recruits on "Some economic crops of Grenada and methods of cultivation" and another at the Colony Hospital Nurses' Hostel on "Simple methods of growing some nutritious foods".

110. Demonstrations given included Banana Spraying for the control of Leaf Spot, at St. Omer, Grenville Vale and Mt. Gay estates, Budding of citrus and egg plants, to senior pupils of Grenville Vale Anglican school and proper method of opening contour trenches, to some workmen at Dr. Bell village, St. John's.

111. *Prize Holdings Competition :*—Judging of fields in connexion with the 1953-54 competition was completed early in the year. There was no competition for the 1954-55 period.

112. *General :*—Regular visits were paid to a number of estates and peasants' holdings in the district. During these visits problems confronting the farmers were discussed and advice given.

Special Activities.

113. *Livestock Inspection :*—During the absence of a Veterinary Officer from the island, inspection of livestock for slaughter was carried out by me and permits issued for the slaughter of female animals, which were unfit for breeding. Inspection was done at Snug Corner, Beaulieu, LaMode and the St. George's Abbatoir. This duty was handed over to the Veterinary Officer in December.

114. *Treatment of Sick Animals :*—Twenty-two (22) cases of animals suffering from various ailments were treated by me, during the period that the post of Veterinary Officer was vacant.

115. *Staff Notes :*—The staff responsible for work on the Agricultural Station and the district comprised of Messrs. E. S. Holgate, Agricultural Assistant, R. F. Edwards, A. R. Hinds, M. Wilson, Junior Agricultural Instructors and N. Knight, Foreman. Mr. Edwards left for a training course at the Eastern Caribbean Farm Institute, Trinidad in March and was succeeded by Mr. Hinds. In July Mr. Wilson succeeded Mr. Hinds, who was transferred to Westerhall.

Report on East Grenada District.

(By Mr. K. I. Rush, Agricultural Instructor.)

Staff.

116. In the early part of 1954, the staff on the Tivoli Agricultural Station consisted of Agricultural Assistant, A. C. Branch, officer-in-charge of the station and the districts, Junior Agricultural Instructor, K. I. Rush, assistant to the officer-in-charge and was also engaged in Artificial Insemination work, Foreman, K. B. Shears, and two stockmen.

117. In the month of March, Mr. Branch left the island for a course at the Eastern Caribbean Farm Institute and Junior Agricultural Instructor Rush, was made Acting Senior Agricultural Instructor in charge of the station, along with Artificial Insemination and the two districts up to the end of November, when he was replaced by Senior Agricultural Instructor E. O. Barrett. During the same period Junior Agricultural Instructor, Dominique, (Land Settlement) assisted three days every week and in July an apprentice was taken on to assist generally.

Weather Conditions

118. The season was an unusual one to crops and livestock, and as a result the yield of crops was poor.

119. On the station 90.27 inches of rain was recorded for the year, the two highest days fall recorded on the 13th September and 27th November were 6.30 and 4.70 inches respectively.

Food Crops.

120. These crops were planted mainly for demonstrational purposes, for providing stock-feed, planting materials for the station and the public, and as a means of revenue.

Crops.	Amount reaped lbs.	Sold. lbs.	Kept on Station lbs.	Fed to animals lbs.	Distributed lbs.
Sweet Potatoes	1,738	1,458	—	280	—
Pigeon Peas	235¾	225¾	10	—	—
Cassava	2,225	2,225	—	—	—
Tannia	274	274	—	—	—
Lisbon Yams	1,516	1,016	500	—	—
Potato Yam	50	—	20	—	30
Corn	619	—	70	549	—

121. *Maize* :—This crop was planted for the multiplication of plant seed. Two varieties were planted, the Hybrid Texas and the Six Weeks. Germination was very poor, and some plants were attacked by Laphygma frugiperda to which Agrocide powder was dusted with no effective results.

122. *Pigeon Pea* :—Two plots were planted with WH. 1. 2. 3. and TS. 1. 2. 3. selections for variety trials.

123. *Tannia* :—This crop yield was fair.

Cash Crops.

124. *Coconuts* collected amounted to 2,475. Outright sales 625 and 1,850 cut for making copra. The amount obtained after drying was 814 lbs. which was sold to the Tempe factory.

125. *Canes* planted on the station is for revenue and the distribution of plants. There are a few of the Barbados varieties. The canes reaped were sent to the River Antoine Estate to be ground on a quarter share. The station got 1,043 gallons of syrup valued $71.27 which was purchased by the said estate.

126. *Clonal Cocoa* planted around 3½ years ago yielded the following up to the period under review :—

No. of Pods	353
Wt. Beans	76¼ lbs.
Wt. Fermented Beans ..	48¼ „
Wt. Dry Beans	36½ „

127. Apart from the above, 16 pods were distributed to a few peasants for establishing nurseries. A plot about ½ an acre was prepared and planted in the month of July, this being the third plot established on the station.

128. *Pineapple*. Two plots have been planted of the Spanish Red and the Black Antigua varieties.

129. *Vegetable Seeds* received and disposed of were as follows:—

Tomato	48 Packages.
Cabbage	36 „
Lettuce	36 „
Carrot	24 „
Onion	3 „
Bean	6 „

130. *Livestock* :—The condition of the animals on the station was good. There was sufficient fodder throughout the year. Three fields were irrigated and the cuttings were rotated.

Animals on the station are as follows :—

Bull	1
Cow	1
Heifer	1
Steer	1
Buck	1
Ram	1
Boar	1

131. *Births* :—There was only one heifer calf born to Mayrose.

132. *Deaths* :—The only animal died on the station was a large Black Boar.

133. *Services* :—There were 41 services as follows during the period.

Buck	10
Ram	3
Boar	28

134. *Poultry :*—There were 2 Roosters, 12 Hens, and 24 Chicks on the station. During the course of the time 1 Rooster and 2 Hens were stolen from the pens one night. The matter was reported to the Police Station. The birds maintained good health during the period.

After reclassification there remained on hand the following :—

Rooster	.. ..	1
Hen	.. ..	7
Cockerel	.. ..	10
Pullet	.. ..	11

Sales for the period totalled 2 and deaths 4.

Eggs collected and disposed of were as follows :—

Production	.. ..	1,344
Sales—(Hatching)	..	294
(Table)	..	1,029
Miscellaneous	..	21

District Work.

135. *Soil Conservation :*—The peasants have been showing far more interest along this line than former years. They have been encouraged in the opening of contour drains, planting of windbreaks, grass barriers and clonal cocoa.

Some have been invited to visit the station as often as possible and those who accepted the invitations were shown around the station. Small scale mulching was emphasied for the dry areas with special reference to clonal cocoa.

Many peasants opened contour drains which were lined out for them at their own request, others made use of the subsidiary grant.

Hereunder is a summary of work done for the period under review :—

Peasants Holdings	39.		
	Total No. of Feet	..	44,192
	Area Affected	..	71 acres.
Estates ..	7		
	Total No. of Feet	..	17,314
	Area Affected	..	23 acres.

136. The number of peasants visited during the period from an advisory point of view totalled 63 along with 15 estates taking soil conservation as the main theme of discussion with all the other problems confronting us today such as, improper housing of livestock, shortage of fodder, exposure of lands and insufficient use of fertilizers. Encouraged vegetable gardening, the planting of bananas, citrus, coconuts, clonal cocoa, pineapple and economical windbreaks.

137. *Prize Holding Competition :*—The competition was of a higher standard than the previous year. The judging was done later this season. It was a good start in getting the people to prepare and plant their lands properly and as an incentive to increase the production of locally grown food. This lasted for only two years.

138. *Rat Campaign :*—The month of November was an island wide rat control campaign for both rural and urban areas. Every building more or less in the St. Patrick's area received some bait. The result was fair.

139. *Lacatan Suckers :*—The demand for the suckers was great for the period and the department was only able to supply to the first set of bookings of 5,496 suckers for which an advance was taken.

140. Animals treated for the following ailments and diseases were :—

Pneumonia Cows 3.
Retained Placenta Cows 3.
Mastitis, Cows 4, goats 2.
Eversion of the uterus Cows 5.
Deworming, Calves 9, goats 12, sheep 8, pigs 5.
Anaplasmosis, Cows 2.
Castration, Bulls 12, sheep 9, pigs 5, dogs 2, donkey 1.
Scours, Calves 3.
Impaction of the rumen, Cows 2.
First Aid, Horses 2, Cow 1, Goat 1, Sheep 1.

141. *Agricultural Fire Ordinance :*—Two permits were issued for the period

Exportation of Fruits :—Permits granted for fruits to Trinidad were 1,175. The fruits were soursop, sapodilla, pumpkin, pears, sugar apple, golden apple, etc.

142. *Inspection of Animals :*—Inspection of female animals for slaughter during the period totalled 66 cows and 30 pigs.

143. *Marketing Organisation :*—The marketing sub-division on the Tivoli Agricultural Station sold over 11,074 lbs. A.P.P. Mash. There was no purchasing of surplus crops due to the lack of a grant.

144. *Artificial Insemination :*—Semen is received twice a week from Westerhall Agricultural Station and is stored on a nearby refrigerator at a small rent. The northern part of the island stretching back to Gouyave is taken care of by the Inseminator stationed at Tivoli.

Here is a summary of calls done during the year 1954 :—

Month	1st Service	Repeat.
January	15	1
February	18	4
March	11	3
April	12	7
May	14	3
June	11	5
July	12	2
August	6	5
September	3	1
October	6	3
November	5	—
December	4	2
	117	36

From the above it can be seen that the people are taking on to artificial insemination. The telephone presents the greatest problem of getting the calls, then not noticing the animals at the proper time is another worry.

Westerhall Livestock Station.

Dairy Cattle.

145. The following table shows the increase in size of the dairy herd during 1954 :

Year 1953		Year 1954	
Cows	12	Cows	10
Cows transferred to Westerhall ..	1	Cows transferred to Westerhall ..	1
Heifers	1	Heifers	3
Bulls	—	Bulls	—
Calves born during previous year and on hand at beginning of the next year ..		Calves born during previous year and on hand at beginning of the next year :	
Male	5	Male	2
Female	1	Female	1
Births :		Births :	
Male	4	Male	5
Female	3	Female	5
Calves transferred to Westerhall ..	1	Calves transferred to Westerhall ..	1
Total	28	Total	28

1 male calf was sold during 1953.
Decrease in the herd was as follows :—

Year 1953		Year 1954	
Sales :		Sales :	
Heifers	1	Heifers	—
Male Calves ..	7	Male Calves ..	4
Female Calves ..	—	Female Calves ..	—
Cows	2	Cows	—
Deaths :		Deaths :	
Cows	—	Cows	1
Male Calves ..	1	Male Calves ..	—
Female Calves ..	—	Female Calves ..	—
Cows transferred ..	—	Cows transferred ..	2
Total ..	11	Total ..	7

Revenue from Sales :
4 Calves —$106.00.

The position on 31st December, 1954 was as follows :—

Cows	8
Heifers	3
Bulls	–
Calves	10
Total ..	21

1 Bull was sold to the butcher for $215.25.

146. Milk production and distribution :

Year 1953		Year 1954	
Total production, Qrts ..	12,012.4	Total production, Qrts. ..	13,287.35
Converted into butter, Qrts. ..	9,553.85	Converted into butter, Qrts ..	4,958.95
Fed to Kids, Qrts.	—	Fed to Kids, Qrts.	68
Fed to calves, Qrts. ..	1,632.3	Fed to calves, Qrts. ..	7,041.75
Fed to pigs, Qrts	72	Fed to pigs, Qrst	58
Sold, Qrts.	753.65	Sold, Qrts	1,110.4
Spilt, Qrts	.6	Spilt, Qrts.	50.25

For further figures on herd production see attached summary of Herd Records for the year.

147. Butter production and distribution :

Year	Production lbs.	Sales lbs.	Supplies to Hospital lbs.	Free. Samples lbs.	Spoilt lbs.	On hand lbs.
1953	B/F from 1952—4¾	519	537	1¾	—	2
	1953 1055					
	1059¾					
1954	B/F from 1953 —2	334½	46½	—	2	2
	1954 383					
	385					

148. Swine :

The following table shows the position on 1st January, 1954 :—

Sows	4
Boars in service	4
Gilts	2
Young Boars	—
Weanings	9
Total ..	19

149. The number of piglets born during the year and their disposal was as follows :—

Year 1953		Year 1954	
Births	102	Births	56
Balance from previous year. ..	28	Balance from previous year ..	37
Deaths	8	Deaths	6
Sales	65	Sales	71
Retained at Westerhall ..	5	Retained at Westerhall ..	5
Transferred to other stations ..	2	Transferred to other stations ..	2
Balance at end of the year ..	37	Balance at end of the year ..	9

Sale of half grown pigs	$ 421.70
3 adult boars were castrated and sold for ..	277.67
4 old breeding sows were sold for a total of ..	306.92
Revenue for sale of piglets	515.00
Total	$ 1,521.29

150. Stud Centre :

The following table shows figures in connection with the stud centre at Westerhall.

Year.	Boars..	Ram sheep	Buck goats	Donkeys	Totals.
1953 ..	54	7	25	3	111
Revenue for 1953 ..	$32.40	$4.20	$13.00	$7.50	$85.50
1954 ..	43	7	36	2	88
Revenue for 1954 ..	$25.80	$4.20	$21.60	$5.00	$56.60

The Jack was loaned to Dougalston estate during the year.

WESTERHALL AGRICULTURAL STATION.

151. SUMMARY OF HERD RECORDS FOR YEAR 1954.

1	2	3	4	5		6	7	8	9	10
Total No. of adult cows in herd	Average output of milk per cow per annum.	LACTATION RECORD IN POUNDS.						AVERAGE DAILY YIELD		Remarks.
		No. of Full-time Lactations.	Average yield in 305 days	Range in yield in 30 days		Average Lact. Period	Average calving interval	During Lactation	For all cows for 1954	
	lbs.		lbs.	Min.	Max.	Days.	Days.	lbs.	lbs.	
				lbs.	lbs.					
Cows: 10	3306.312	9	2762.788	98	610	299	392½	11	11½	Mabelle had 2 fulltime Lactations. Quail 1st died 7. 12. 54.
1st calf Heifers: 1	2893.5	1	2411.00	lbs. 146	lbs. 520¼	244	...	11⅘	11⅘	Matilda and Verina were transferred to Mt. Moritz Agricultural Station—20. 9. 54.

Notes: (1) Method of Recording: Daily.
(2) Method of Calf rearing: Weaned at Birth.
(3) Number of times milking per day: Twice.
(4) Average age of heifers at calving: Three (3) years.
(5) Type of Feeding. Fodder and concentrates (3 lbs concentrates per 2 gallons).

J. COCOZZA,
Veterinary Officer.

Report on Poultry Multiplication Scheme for the year 1954.

152. The above scheme was carried on successfully during the year, and the demand for chicks and eggs could not be met.

153. The flock at Westerhall maintained good health throughout the year, but it was discovered that most of the laying hens grew fat, hence the decrease in the egg production. Quite a number of birds had to be culled and were sold to the public.

154. The following statement shows the stock on hand on the 31st December, 1954 :—

Rhode Island Red :

Roosters ..	.. 19
Hens ..	.. 132
Pullets ..	.. —
Chicks ..	.. 23

Plymoth Rock :

Roosters ..	6
Hens ..	.. 48
Pullets ..	.. —
Chicks ..	.. 12

155. The following statement shows the egg collection and disposal for the year ending 31st December, 1954.

On hand, December, 1953 ..	31			
Total collection for 1953 ..	Jan.-July	17,539—	Aug.-Dec	6,819.
Hatching transferred for Incubation	Jan.- July	7,701—	Aug.-Dec.	1,985
Hatching sold for cash ..	Jan.-July	187—	Aug.-Dec.	47
Pullets eggs sold for cash ..	78.			
Cracked eggs sold	6			
Table eggs sold and transferred ..	Jan.-July	9,106—	Aug.-Dec.	4,529
Broken	Jan.-July	315—	Aug.-Dec.	216
Transferred to A.I.	Jan.-July	126—	Aug.-Dec.	93.

Revenue collected :

Hatching sold for cash ..	234 at	10c.	—	23.40
Pullets eggs sold	78 „	5c.	—	3.90
Cracked eggs sold	6 „	5c.	—	.30
Table eggs sold and transferred	13,854 „	8c.	—	1,108.32
Total				$ 1,135.92

Sale of Poultry :—

Roosters at 60c. per lb. .	—	2 for	7.25
Culls at 50 per lb. ..	—	59 for	137.71
Cockerels at 60c. per lb.	—	34 for	69.24
Total			$ 214.20

156. The following shows the amount of eggs transferred to the Incubator, also chicks hatched and distributed :—

Placed in Incubator ..	9,686
Hatched	5,573
Deaths	1,481
Sales	3,092
Revenue received ..	$ 1,236.80

157. The following chicks were exported :—

St. Lucia	.. ..	270
St. Vincent	.. ..	50
Antigua	.. ..	50

Veterinary Services.

(Report by J. Cocozza, M.R.C.V.S.—Veterinary Officer.)

Artificial Insemination of Cattle.

158. *Insemination :*—These fall into three categories :—

(*a*) First service, which are inseminations done on maiden heifers or cows inseminated for the first time since calving.
(*b*) Repeat services to a previous service by a bull.
(*c*) Repeat services to a previous insemination.

(*a*) First service	.. ..	370
(*b*) Repeats to Bull	..	22
(*c*) Repeats to A.I.	..	148

159. (*a*) and (*b*) are classified as First Inseminations, so that, actually, 540 inseminations were done on 392 cows.

160. (From the above data, one might be apt to conclude that of the 392 cows inseminated, 148 were subjected to repeat services. However, this is not so, since a number of cows received 3 and sometimes 4 inseminations).

161. Distribution of Insemination :—

1. Parish of St. George's	..	194
2. Parish of St. David's	..	129
3. Parish of St. Andrew's	..	87
4. Parish of St. Patrick's	..	55
5. Parish of St. Mark's	..	33
6. Parish of St. John's	..	42
Total	.. ..	540

162. The relatively low number of inseminations done in the last three parishes can be attributed to the difficulty in transmitting calls to either of the two centres, from the said areas.

163. *Results :*—Of the 74 calves which were born during that period, 58 were born to a single insemination, 14 after two inseminations and 2 after a third insemination was performed.

164. There have been four cases of 'known' abortions.

165. *Abnormalities :*—(1) Tailless calf with common recto-vaginal opening.
(2) Calf was born semi blind.

166. *Bulls.*—The Red Poll and Jersey breeds are used.

Bulls	Breed	No. of Semen Collects	First Insem.	Repeat	Calves M.	Calves F.
Victor Echo Chief ..	Jersey	59	118	54	19	18
Royal Miss 'Wonder' ..	G. Jersey	60	69	23	11	6
Olga's Echo	G. Jersey	43	69	32	—	—
Chieftain	„	28	6	—	—	—
Buttercup Lad	„	9	13	5	—	—
Knepp Comrade ..	Red Poll	94	117	34	13	7
			392	148		

167. (Repeat services are done with semen of any bull, so that, the number of repeats shown above gives no indication of a bull's fertility.)

168. Chieftain continued to give semen of poor quality, with the result that it was transferred to Mt. Moritz.

169. Buttercup Lad, whose semen is of a better nature, was taken in his place, but only nine collections have been taken from him, due to his unwillingness to serve.

170. Olga's Echo was brought into use from May, and that explains the fact that he is shown not to be the sire of any calves.

171. *Revenue :*—A fee of $1.20 is charged, which covers a first and two repeat inseminations. With the exception of a few services which were given free at the start, fees amounting to $387.60 have been collected.

172. *Staff :*—This scheme was initiated by Dr. D. R. Melrose of the Reading Cattle Breeding Centre, who, after giving the scheme a very sound start, left his work to be continued by the Veterinary Officer, Dr. E. A. M. Pitt. Unfortunately, the Veterinary Officer resigned his post in April, a mere two months after Dr. Melrose had left.

173. With the departure of the above mentioned officers, the work devolved on the Junior personnel, (Junior Agricultural Instructors K. I. Rush and A. R. Hinds and Technical Assistant R. E. Pierre) who carried on until the arrival of Dr. J. Cocozza in December.

General Organisation.

174. The Artificial Insemination Advisory Committee, which consists of a number of stock-owners and peasant representatives under the chairmanship of the Superintendent of Agriculture, held one meeting in February.

175. Due to the fact that motorcycles have been found unsuitable for insemination purposes, a small van has been purchased for the main centre at Westerhall.

176. Transmission of requests for Service. The inefficient working of the telephone system continues to be the main obstacle in the path of the Scheme's progress, and the condition for the last three months of the year have been markedly bad.

Report of Veterinary Officer for 1954.

177. *Change of Veterinary Officer.*—Dr. Pitt left Grenada April, 1954. Dr. J. Cocozza took up appointment in December, 1954.

178. *Reportable Diseases.—Rabies :*—One more case of rabies was discovered on 22nd November, 1954. The mongoose is still the suspected carrier, though no further evidence to incriminate him has been found.

Large animals in the area concerned were given injections of Rabies Anti-Serum as a preventative measure.

179. *Fowl Cholera, Fowl Typhoid, Foot and Mouth Disease, Hog Cholera, New Castle Disease :* No outbreaks have been reported.

180. *Other Diseases.—Coccidiosis:*—An outbreak of disease on Isle de Rhonde was investigated on 7th November 1954, by Agricultural Assistant, C. M. Leys. Sulpha drugs were left with a responsible peasant, and arrangements made for periodic visits to this island and other islands, are in hand.

181. *Parasitism :*—This appears to remain the major cause of unthriftiness and economic loss in the animal population. Supplies of Phenothiazine have been issued to all who apply, and instruction given on the use of standard dips for eradication of external parasities.

182. *Inspections :*—Examination of animals for export continues. Inspection of female animals for slaughter, carried out for the greater part of the year by the Agricultural department staff continued at Beaulieu, Snug Corner and St. George's Abattoir.

Marketing Organisation.

(Report by J. W. Wilson—Marketing Officer).

183. The Marketing Organization's operations of buying, storing, processing, and distribution (by sale) of food crops, poultry and pig feeds, and vegetable planting material, and, the receiving, warehousing and shipping of Carriacou Cotton Crop, were carried out at established centres throughout the year.

184. Production of Seasonal Food Crops showed an over all increase over the previous year ; supplies may be said to have been adequate, and the dependence on imports such as rice, cornmeal, and vegetable crops, considerably eased. The outstanding exception was the Corn Crop which was only about half the 1953 production; Marketing Organization purchased 55,000 lb., as against 120,000 lbs. in 1953.

185. Production of poultry feeds by the organization is a well established item. The demand is steady. Sales average about 20,000 per month. This project consumes all available surplus corn, which heretofore proved difficult to dispose of profitably ; now it is necessary to import corn when, as in 1954, there is a short crop, so that demands for poultry feeds may be met.

186. A pig balancer ration which has proved to be an effective and economical aid in hog feeding has not yet come into its own, in volume of demand, for the very obvious reason that Grenada has not yet again settled down to pig rearing on anything like the scale of which she is capable.

187. Vegetable seeds were sold throughout the year at all Marketing Organization Centres. Production of green vegetables continues to be spasmodic; no group of producers have yet settled down to the business of providing a continuous supply; prices obtained e.g., Tomatoes—32 cents per lb. Cabbage 20 cents per lb., Carrots 14 cents per lb., Lettuce 6 to 8 cents per head, would make this a paying venture.

188. The 1953-54 Cotton Crop amounted to 441 bales, of which 361 were sold to The Raw Cotton Commission of Liverpool, and 80 bales to the Barbados Knitting and Spinning Company.

189. During this year a Small Warehouse with a capacity of 400 bales was erected, to releive congestion caused by storing bales of cotton at the pier; all cotton is now received at, and shipped from this warehouse.

190. Appended is a Financial Statement of the working of the Marketing Organization for the year is given in Appendix A.

Land Settlement.

(Report by D. K. Samuels, Agricultural Assistant).

Staff.

Mr. D. K. Samuels, Agricultural Assistant (Land Settlement),
„ C. R. Dominique, Junior Agricultural Instructor,
„ D. Rennie, Junior Agricultural Instructor.
„ M. A. Wilson, Junior Agricultural Instructor,
„ L. C. Sayers, Junior Agricultural Instructor.
„ E. Friday, Land Rent Collector.
„ C. Bain, Land Settlement Ranger,
„ C. Phillip, Land Settlement Ranger,
„ H. LaTouche, Land Settlement Ranger,
„ E. Layne, Land Settlement Ranger,
„ G. Bennett, Land Settlement Ranger,
„ J. Shade, Land Settlement Ranger, Carriacou,
„ C. Romaine, Land Settlement Ranger, Carriacou,
„ A. Sydney, Land Settlement Ranger, Carriacou.

INTRODUCTION

192. In this report an attempt is made to put on record the facts about the conditions of the Settlements and the Settlers in Grenada at the end of 1954.

193. The facts and figures concerning the Settlers, Holdings, Crops, Livestock, Water Supply, Roads and Social Activities have been collected by the Junior Instructors in an endeavour to present a true picture of the workings of Land Settlements in Grenada and Carriacou.

Settlements.

194. There are 14 Land Settlements in Grenada consisting of 1,880 acres, and 6 in Carriacou consisting of 2,309 acres, making a total area of 4,189 acres. Six of these in Grenada, and five in Carriacou have been fully paid up.

195. There is also an area of approximately 60 acres in Mt. Moritz to be sub-divided and allotted to peasants who were dispossessed in the establishing of Mt. Mortiz Demonstration Station. Some of these peasants are at present on an Annual Tenancy pending the sub-division and allotment.

196. During the year it was proposed by Government to acquire a section of Mirabeau and Plains estates for Housing and resettling of Tenants who were given notice to quit by the landlords.

Rehabilitation of Existing Settlements.

197. The grant of $2,500 approved under the Colonial Development and Welfare Scheme D. 1592 in 1951, for 3 years to assist in the development of minor industries and essential basic Soil Conservation work on the settlements has been in operation during the year, and has been extended for a further period of 5 years.

198. The 2 acre pilot holding in Mt. Nesbit which was established under the scheme continues to show progress. The returns of crops reaped show a steady rise, and soil erosion completely reduced. These were made possible by the establishment of wind breaks, anti-erosion methods and application of farm manure to the soil. The cow which was purchased in 1953 was Artificially Inseminated and gave birth to a heifer calf, both in very good health. During the year repairs were effected to the Ranger Operator's house and provisions are now being made for erecting galvanised guttering with drum containers for water supply.

Soil Conservation.

199. During the year continued financial and technical assistance were given to settlers on all Land Settlements throughout the Colony. This was made possible under the Colonial Development and Welfare Scheme. The result shows a marked decrease in soil erosion and on uplift in crop production. Below is summary of work done and assistance given :—

No. of Settlers Assisted	..	92
Contour Barriers ..	..	2,850 feet.
Contour Drains ..	..	4,320 „
Run off Trenches ..	..	450 „
Windbreaks ..	..	3,468 „
Teak Used	..	4,100.
Assistance Given ..	..	$ 945.45

Livestock.

200. The settlers have all taken a keen interest in livestock during the year, but due to the very small area allotted them, inadequate space for grass cultivation and rotation of crops have proven the deterrant to the development of Livestock Industry on the settlements.

201. In spite of the limited space for tethering on Land Settlements there are at present 310 dual purpose cows owned by settlers ; River Sallee having 129 heads.

202. During the year all sick animals were treated and 16 Artificially Inseminated.

Small Stocks.

203. There are approximately 214 pigs of no pedigree and 184 goats owned by settlers, these are reared for slaughter for local consumption.

Poultry.

204. The rearing of poultry by settlers has been a major industry during the year. The flock consists of Plymouth Rocks, Rhode Island Reds, Red Hampshire, Leghorns, and a few Minorcas and Wyandottes. There is also an abundance of nondescript birds which are being c ross-bred with the types named above. These cross-bred birds appear to stand up more favourably to local conditions.

205. The settlers have found that in the Poultry Industry the Pedigree flock are susceptible to colds, and pneumonia which generally wipe out the entire flock before they respond to treatment.

206. The marketing of eggs and poultry are done both locally and in Trinidad, and the prices are quite favourable to the settlers.

Crops.

207. On most settlements the lots are interplanted throughout with cocoa, bluggoes, bananas and seasonal crops. Cocoa is sold to local traders whilst other crops are sold in the local markets.

Roads.

208. During the year all Land Settlement Roads were maintained in fairly good condition. The amount expended was $2,840. There were no newly constructed roads during 1954.

Water Supplies.

209. Due to the absence of proper and adequate water supplies on most Land Settlements, settlers have made no effort to reside on their holdings. The present available sources are Rivers, Springs and Gullies, and which in most cases are inaccessible to them, being located on individual private purchasers' land.

Social Welfare.

210. During the year efforts were being made to resuscitate and to introduce Club Life and recreation on several Settlements with no result. The great drawback lies in the fact that the settlers reside at far distances from the settlement, and in most cases there are no provisions for recreational facilities.

Co-Operatives.

Group activities in the past have been neglected due to:—

(1) The absence of a co-operative Ordinance ;
(2) the large proportion of part-time settlers with divers occupations ;
(3) the absence of a full social life on settlements ; and
(4) the loss of faith in the existing Nutmeg Association.

212. With the implementation of a Creamery and a Poultry Co-Operative being established on proper Co-Operative principles for River Sallee, together with the introduction of the Co-Operative Ordinance in 1955, it is hoped to have a project on all settlements at the end of 1955. Emphasis will be placed on the field of Co-Operative Marketing, which has proven to make the greatest contribution in peasant agriculture.

213. The Malayan Copra Drier at River Sallee continued to maintain efficiency throughout the year ; approximately 1,800 lbs., of copra were made and sold. The settlers are taking full advantage of this project which is being run co-operatively.

Finance.

214. (*a*) *Land Settlements* :—The total collections during the year amounted to $1,400.13. Arrears at the 31st December 1954 totalled $311.38 as compared with $722.20 at the 31st December, 1953. Payments generally were fairly good during the year, due to the fact that notices were served on defaulters prior to recommendations for forfeiture.

(*b*) *Title Deeds Issued* :—The number of Deeds issued during the year are as follows :—

Settlements	No.	Acreage.	Cash Value
St. Clouds	6	4A. 2R. 05P.	$ 536.22
Mt. Cassell	1	2 1 03	$ 130.68
Mt. Nesbit	6	9 3 27	620.94
Plaisance	—	— — —	—
Fraze	—	— — —	—
River Sallee	5	7 2 33	539.04
Total	18	24 1 28	$ 1,826.88

Settlements.	Lots Paid up.	Transfers.	Free. Holds.	Forfeitures
St. Clouds	3	—	1	—
Mt. Carsell	1	—	—	—
Mt. Nesbit	1	1	—	
Plaisance	—	1	—	—
Fraze	2	1	—	—
River Sallee. ..	7	1	2	—
Total ..	14	4	3	—

Crown Lands.

215. These consist of tenancies on garden and house spots in St. George's area.

216. During the year the total amount collected from tenants on Crown Lands St. George's area amounted to $2,250.12 as compared with $1,822.60 at 31st December, 1953. Arrears at the 31st December, 1954 totalled $1,873.74 as compared with $3,620.18 at 31st December, 1953.

217. The amount reflected as arrears resulted from Governments decision to terminate these tenancies in 1948 and 4 years later in 1952 instructions were issued to collect all outstanding arrears.

218. At the end of the year all house spots on Crown Lands St. George's were passed over to the Central Housing and Planning Authorities.

Tenant Compensation.

219. During the year numerous requests for action under the Agricultural Small Tenancies Ordinance No. 17 of 1952 were made to the Land Settlement Officer. There were 85 cases, 78 of which were dealt with by Arbitration, and 7 by amicable settlement between landlord and tenant.

General.

220. Most of the settlements in the colony are located in mountanious sections of the interland where road accessibility proves hazardous for ingress and egress with agricultural produce, thereby rendering approximately 2/3 the areas uncultivable and unresidential.

221. It is also observed that due to the excessive sloping together with continuous soil erosion most of the holdings are not suitable for crop cultivation, but are best suited for Timber Tree Planting, Improved Grasslands, Citrus and Coconuts which do not need a great deal of cultivation of the soil. These could be regarded as Class IV and Class V lands.

222. It is also noted that the area allotted to each settler is far too small to be regarded as an economical unit.

223. During the year the post of Land Settlement Officer became vacant due to the resignation of Mr. L. A. Trotter. Messrs. B. Hamilton, Plant Disease Inspector and J. S. Ross, Forest Officer acted. The post was finally filled in October by the present Land Settlement Officer.

Recommendation.

224. (1) For Land Settlements to fulfil the functions intended, suitable lands less mountainous, and more arable should be acquired and sub-divided into lots of not less than 3 acres.

225. (2) The selection of settlers should be carried out by a Committee consisting of local planters, the member of Legislative Council for the Parish in which the land is situated and the Superintendent of Agriculture or his nominee.

226. (3) The selection of suitable peasants should be based on the following :—

(i) The character of the individuals ;

(ii) experience in, and adaptability to peasant agriculture ;

(iii) age and health of the applicant.

227. (4) No interest should be added to the purchase price of the land.

228. (5) Loans on which a small interest is payable should be made available to settlers to develop the holdings under the direction of the Land Settlement Officer.

229. (6) Self-aided Housing Scheme should be introduced on all settlements.

230. (7) Roads and water supplies should be well established and maintained.

Forestry.

(Report by J. S. Ross—Forestry Officer).

Progress Report on the Forestry Work in Grenada for the year ending 31st December, 1954.

General.

231. Due to the absence of both the Forestry Officer and the Forest Ranger for the first eight (8) months of the year under review, Forestry work in Grenada has been more or less at a standstill. Work in the Government Forest Reserve has been restricted mainly to protection, survey and revenue collection.

232. Due to the fact that no funds were provided in the 1954 Estimates for Silviculture, this branch of Forestry has been neglected, no nursery work was done; and no planting, weeding, thinning or other silvicultural operations were carried out. Seedlings raised in the nurseries during the preceding year were abandoned, and only a very limited number of teak seedlings have been utilised for planting on Crown Lands for Soil Conservation purposes.

233. The sale of timber from the St. Margaret area of the Grand Etang Reserve was continued on a selection basis with a view to favouring natural regeneration.

Legislation.

234. An amendment to section 30, subsection (3) of the Forest Soil and Water Conservation Ordinance was passed by Council on the 18th December, 1954.

235. This amendment permits the Forest Officer to receive compensation for offences compounded by him as provided under the Ordinance.

Surveys.

236. Under Colonial Development and Welfare Scheme 2056 a Forest Surveyor was appointed under contract for a period of two (2) years with effect from 1st April, 1954.

237. Since his appointment the following survey work has been done :—

(i) An area of 69 acres, 2 roods, 9 poles declared to be protected forest at Tuilleries and Bagatelle Estates was completed.

(ii) Fourteen (14) lots in same area recommended for acquisition totalling 43 acres, 3 roods, 12 poles was also surveyed.

(iii) A contour path through the Grand Etang Reserve, from the Grand Etang public road to Fon Ville was demarcated by the surveyor, work along this path was carried out during the year and it is estimated that ¾ of the path is now cut.

238. **Staff.**

J. S. Ross, Forestry Officer,
L. C. Jones, Forest Ranger,
William Garraway, Forest Guard (Eastern Range),
Samuel Daniel, Forest Guard (Western Range),
Vannie Honore, Nutmeg Collector and part time Forest Guard,
L. F. Berkeley, Forest Surveyor (on contract to 31st March 1956).

239. Mr. J. S. Ross, Forestry Officer, returned to the Colony at the end of August 1954, after his successful completion of a two-year course in Forestry with the Forestry Commission in the United Kingdom.

240. Mr. L. C. Jones, Forest Ranger, also returned to the Colony at the end of August after successful completion of a six-months course with the Forestry Department, Trinidad.

241. During the absence of these officers the post of Forest Officer was filled by Mr. L. A. Trotter, Land Settlement Officer, up to the end of March, and Mr. B. Hamilton up to the end of August.

Offences.

242. Six minor Forest offences were recorded during the year. In all of the cases the offenders were cautioned by the Forestry Officer.

Meteorology.

243. Rainfall recorded at the Grand Etang during the year was as follows :—

January	28.40 ins.	July	11.88 ins.
February	10.07 „	August	12.85 „
March	6.87 „	September ..	18.36 „
April	11.36 „	October	16.21 „
May	6.46 „	November ..	36.60 „
June	8.94 „	December ..	16.40 „
Total for the year..	183.90 „		

It should be noted that the total is well above the average rainfall for the Grand Etang which is recorded as being 141.00 inches up to 1951.

Boundary Lines.

244. The cutlassing of all known boundary lines and inspection paths were carried out during the year.

245. The total expenditure under this head amounted to $1,248.20.

Nutmegs.

246. Routine cutlassing of nutmegs in order to facilitate collection was carried out at a cost of $288.92, while revenue from collections totalled $613.51.

247. Nutmegs and mace collected and delivered for the year are as follows :—

3,932 lbs green nutmegs.
50 lbs dry nutmegs.
111 lbs grinder nutmegs (cracked),
56 lbs whole mace,
90 lbs broken mace.

Silviculture.

248. This has been restricted to the selective felling of trees in the St. Margaret area with a view to encouraging natural regeneration.

No replanting has been done except on the Crown Lands at D'Arbeau where a small ½ acre plot of teak was planted.

Revenue.

249. Revenue collection from Forestry sources during the year was as follows :—

Timber	$ 1,124.62
Nutmeg and Mace	616.49
Fuel wood	69.36
Bamboo	92.88
Miscellaneous	.96
	$ 1,904.31
Timber supplied to Government Departments	193.98
Total	$ 2,098.29

250. The following items of produce were sold during the year :—

165 Timber trees,
142½ Cords Fuel wood,
770½ Bundles of Bamboo,
581 Piles and Posts.

Miscellaneous.

251. The Conservator of Forests for the Windward Islands visited the Island twice during the year.

252. The Forestry Officer paid an eight-day visit to Carriacou in November for the purpose of investigating the possibilities of extracting timber from the Government Forest Reserve there for ship building. He made a survey of the area during his visit and a report has been forwarded to Government stating his recommendations.

Plant Disease Control.

(Report by W. H. Hagley—Plant Protection Officer.)

Report for year 1954.—Witches' Broom.

253 *Introduction :*—Figures for the year 1954, which mark the completion of the sixth year of the campaign, disclose that another successful year of control activities has been achieved. This success may be evaluated in terms of an overall reduction of the indicence level of the disease by 13.6% and 10.8% for estates and small holdings respectively, and a specific decline in the level of pod and cushion infection from 3% to 85%. The cost of control, assessed as a charge on the cocoa industry of the Colony, despite a 20% wage increase for labour, was approximately 78 cents for each bag (200 lbs) of cocoa exported during the year 1954.

254. *Weather Conditions :*—Parochial records indicate that the rainfall for the year (1954) was 5.4% higher than that of the previous year, and exceeded the average for the 5 year period 1948—52 by 8.2%. Rainfall during the first three quarters of the year was approximately average. Heavy precipitations during the month of November, however, reflected itself in abnormally high returns for the 4th quarter and accounted in large measure, for the 8.2% increase for 1954 over the average for the period 1948—52.

255. *Expenditure :*—The cost of the Campaign for the year showed a small increase of $1,393 over that of the previous year. This increase was primarly brought about by wage increases for labour and the payment of increments to inspectors.

256. *Legislation :*—Regulations under the Plant Protection Ordinance with regard to the control of Witches' Broom disease of cocoa, have, on the whole, been strictly observed by the average cocoa producer. A keen watch, however, was maintained during the year to prevent the planting of cocoa above the 1,000 feet contour. Planting of this nature was recorded in parishes of St. David's and St. Andrew's and dealt with without invoking the powers of the Ordinance.

257. *Control :*—From a study of the incidence of the disease as revealed by the record of treatments for the past five years, it has been found desirable to modify the periods of survey, with regard to the areas of high, intermediate and low rainfall. As a result of this change, the areas of high rainfall have been worked thrice for the year, and the intermediate and low areas have been given two and one working respectively.

258. " Black spot" areas in either of the two latter categories are given additional treatments as conditions may warrant. Workings of this nature have made no extra demands upon labour and the reduction of the time interval between workings in the areas of high incidence have proved to be of appreciable value to the effectiveness of control.

259. The field operation of pruning cocoa trees has met with considerable revival in certain areas. The canopy of well-regulated cocoa fields greatly facilitate control measures. Cultivators have, therefore been urged to give this cultural operation more routine attention.

Disease Trends :—Figures for the year show that there was a slight advance of the disease to new areas on both estate units and small holding areas. This recorded spread was, however, more than counterbalanced by a decreased incidence of re-infection in recorded areas. See Appendix I. Tables I and II.

The incidence of the disease has not as yet been recorded on eleven small-holdings areas and four estate units in the parishes of St. David's and St. George's—taken jointly.

261. *Incidence of Disease :*—From a study of Table III Appendix I it will be observed that the incidence of the disease attained a comparatively high level in the high rainfall areas when compared with those for the low and intermediate areas.

262. The number of trees treated, irrespective of those treated by the cultivator during interim periods of control, amounted to 45,675. Of this number approximately 50% of the trees felled (388) carried either pod or cushion infection or both. The incidence of this form of infection has therefore been for another year, negligible.

Love Vine.

263. Very wet weather during the last quarter of the year was inimical to the use of poison sprays for the control of lovevine. The technique of control that has been adopted, aims primarily at the prevention of seed production by clearing the parasite from infested areas and the control of vegetable regrowth in such cleared areas by the use of suitable poison sprays.

264. Considerable work has been effected on the control of this pest in the parishes of St. John's and St. Mark's and with a favourable dry season in 1955 its eradication should be extensive in these parishes. The drive has been considerably extended in the parish of St. George's where similar results can be anticipated. (See Appendix I.)

Cane Farming.

(Report by E. Payne—Cane Farming Officer).

265. *Sugar :*—The Grenada Sugar Factory produced 2,527 tons of sugar in 1954. The return of 10.43 tons cane per ton sugar was an improvement over returns, in recent years, see Table I, extracts from sugar factory's reports 1949—1954.

Table I.—Extracts from the Grenada Sugar Factory's Reports.

	1949	1950	1951	1952	1953	1954
Sucrose % cane	12.28	11.26	10.36	11.15	11.29	11.27
Fibre % cane	14.81	15.44	16.09	18.02	18.54	14.89
First expressed juice (Brix) ..	19.97	17.91	17.22	19.30	17.89	17.33
Purity of normal juice	78.85	80.08	76.93	77.32	82.90	79.77
Gallons juice per ton cane ..	152.40	151.60	150.55	141.44	146.68	154.05
Tons cane/tons sugar	9.62	10.31	11.94	11.11	10.58	10.43
Grinding time % available ..	85.09	87.07	71.19	77.35	86.70	86.50
% Peasant canes/total canes ..	25.60	31.80	42.70	46.70	39.00	43.03
End of crop	3rd May	26th May	25th August	6th June	30th May	9th June
Total tons sugar bagged ..	1,669.8	1,687.3	2,778.8	1,928.8	2,107.8	2,527.2

266. The decline in peasant production in 1953 was reversed; peasant cane rose from 8,222 tons in 1953 to 9,866 in 1954. A further increase in peasant production is expected in 1955 but will be offset by the decline in production at Woodlands Estate.

267. B. 37161 and B... 4098 continued to be the most popular varieties planted. the former with peasants and the latter on the estates. Other canes planted on a commercial scale are B. 34104, B. 37172, and B. 41227. More detailed data on varietal acreage is not reliable so long as peasants use mixed planting material.

268. The Cane Farming Officer assumed duties in July, 1954. In August, Mr. D. M. Hanschell, Sugar Agronomist, Trinidad, visited the island and recommended sites for four field trials, two 6 x 6 Latin Square variety trials, and two 3 x 3 x 3 factorial fertilizer trails (N.P.K.). The experiments established in September, are progressing satisfactorily ; they will be reaped March, 1956.

269. Froghopper, in the past a minor pest of the local cane industry threatened considerable expansion, and dusting of infected areas with a mixture of Agrocide III powder and pulverised limestone was supervised by the Cane Farming Officer with the co-operation of the management of the Grenada Sugar Factory. No effort will be spared in the attempt at combatting Froghopper.

270. Towards the close of the year a questionnaire-survey was launched in the cane belt. A number of cane farmers in each cane growing district is to be interviewed. By year end Caliste, Grand Anse, Woburn and Calivigny Road area had been covered. The survey continues.

271. *Rum :*—Official rum production in Grenada for 1954 was 65,927 proof gallons as compared with 68,831 in 1953.

272. *Visits :*—The Cane Farming Officer visited Trinidad, November 22nd to 26th, to attend the annual British West Indies Sugar Technologist Conference. In view of the growing threat of froghopper to cane in Grenada, the opportunity was taken to study prevailing treatment measures in Trinidad.

Colonial Development and Welfare Schemes.

Agricultural Development Carriacou :—Scheme D. 1859

Publications, Correspondence and Organizations.

273. Bulletins and Reports from Departments of Agriculture and Institutions in all parts of the world, received and gratefully acknowledge.

Legislation Affecting Agriculture enacted during the Year.

274. Ordinance No. 57 of 1954 creates a statutory body to control the production and report of bananas.

275. Ordinance No. 37 of 1954 creates a Body Corporate to regulate and control Land Settlement and Development in Carriacou.

276. Ordinance No. 45 of 1954 makes provision for assisting the Fishery Industry by way of loans for the building of fishing boats and for the equipment thereof with engines and sails.

277. Ordinance No. 47 of 1954 amends the Forest Soil and Water Conservation Ordinance, 1949.

278. Ordinance No. 19 of 1954 amends the Livestock (Annual Census) Ordinance, 1953.

279. Ordinance No. 18 of 1954 further amends the Nutmeg Industry Ordinance.

280. Ordinance No. 24 of 1954 consolidates and amends the law relating to the sale of Produce.

281. S.R. & O. No. 34 of 1954. Animal Diseases (Importation) Control (Amendment) Regulations.

APPENDIX I.

Plant Disease Control 1954.

TABLE I.

Estate Units.	No.	Percentage.
No. fields with new infection	46	2.11
No. fields with re-infection	1,457	66.84
No. fields without re-infection	343	15.73
No. fields with recorded infection	1,846	84.68
No. fields without recorded infection ..	334	15.32
No. fields inspected	2,180	100.00

TABLE II.

Small Holdings' Areas	No.	Percentage.
No. holdings with new infection	179	1.95
No. holdings with re-infection	1,769	19.33
No. holdings without re-infection	1,169	12.77
No. holdings with recorded infection ..	3,117	34.05
No. holdings without recorded infection ..	6,034	65.95
No. holdings inspected	9,151	100.00

TABLE III.

Small Holdings' Areas—Analysis of Infection.

Areas.	With recd. infection	Without recd. infection	Total.	acreage. Cocoa	No. of trees. pruned	pol.	Fld.	Total
High Rainfall	2,412	1,531	3,943	1,966	43,067	202	749	44,018
Interm. Rainfall	536	2,426	2,962	2,069	1,321	59	46	1,426
Low Rainfall	169	2,077	2,246	1,980	229	—	2	231
	3,117	6,034	9,151	6,015	44,617	261	797	45,675

ANNUAL RAINFALL RETURNS—1954.

No.	OBSERVATION STATION.	January	February	March	April	May	June	July	August	September	October	November	December	Total	Maximuum in one day and date			No. of days on which rain fell
		Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Date.		Ins.	
1	Annandale Station ..	8·49	13·31	3·94	2·84	6·30	18·94	19·30	14·19	...	21·85	17·32	13·25	139·73	Aug.	2nd	5·59	254
2	Botanic Station ..	3·11	6·32	1·01	·47	1·02	11·43	11·63	9·77	15·47	18·11	11·90	6·87	97·11	Sept.	22nd	4·19	166
3	Calivigny Estate ..	3·37	4·75	·81	—	·36	6·91	8·74	5·32	10·13	9·09	10·61	6·16	66·25	July	1st	2·55	154
4	Grand Etang Estate ..	9·05	14·27	3·68	3·26	5·10	18·48	20·16	19·60	...	—	..	..	93·60	Aug.	1st	7·07	169
5	Hope Vale Estate ..	4·30	9·17	·65	·16	·33	14·04	10·68	6·84	10·56	9·75	12.29	7·48	86·25	Feb.	14th	2·82	187
6	Mt. Moritz Station ..	3·27	5·62	1·02	·23	1·89	9·95	15·38	10·44	...	11·82	12·83	6·74	79·19	Aug.	2nd	2·88	191
7	The Park ..	3·67	7·24	2·44	·98	1·79	15·27	12·19	9·27	30·25	12·09	12·34	6·97	114·50	Sept.	24th	18·31	258
8	Westerhall Station ..	2·85	4·86	·87	·35	·21	6·80	6·20	5·38	17·17	11·23	12·06	5·64	73·62	Sept.	23rd	9·87	160
9	Richmond Hill ..	2·76	5·87	1·16	·52	·52	9·13	11.17	8·00	14·18	—	..	..	53·31	Sept.	24th	5·23	154
10	Ashenden Cocoa Station ..	6·86	11·85	3·18	1·52	2·52	14·42	11.88	7·65	26·12	11·83	..	10·69	108.52	Sept.	23rd	11·00	230
11	Les Avocats Station ..	8·07	15·74	4·16	2·13	2·90	16·53	19.56	8·87	31·42	16·34	18·56	11·27	155·55	Sept.	23rd	11·00	255
12	La Sagesse Estate ..	7·77	5·12	1·82	2·22	·52	9·94	6.77	6·35	...	18·76	..	6·88	66.15	Oct.	15th	4·00	144
13	Boulogne Nurseries ..	6·21	7·30	·90	·68	1·87	8·38	5.09	5·67	15·91	12·49	17·81	6·36	88·67	Sept.	23rd	6·51	224
14	Carriere Estate ..	3·54	5·62	·53	·06	·96	7·19	3.99	3·65	12·40	9·68	15·98	2·44	66·04	Oct.	30th	4·81	146
15	Dunfermline Estate ..	6·55	5·96	·57	·27	1·00	7·57	4.53	5·65	...	...	...	4·89	36·99	Jan.	9th	2·92	66
16	Grand Baco'et Estate ..	4·50	7·13	1·41	·84	1·18	12·49	7.13	5·90	16·15	12·51	15·67	7·99	92·90	Nov.	10th	4·27	260
17	Hope Estate ..	3·27	5·50	·79	·80	·86	10·77	6·20	4·95	...	...	..	..	33·14	June	28th	1·95	71
18	Mt. Horne Cocoa Station ..	7·58	7·63	1·30	·74	2·32	8·93	6.03	6·44	18·38	11·19	20·46	6·16	97·21	Sept.	22nd	10·17	214
19	Niaganfoix Estate ..	9·54	11·03	2·01	1·16	3·39	11·06	10.28	9·22	...	...	..	..	57·69	Jan.	8th	4·10	99
20	Richmond Estate ..	5·56	7·05	1·51	·74	1·40	10·67	6.82	6.27	...	...	..	..	40·02	Feb.	8th	1·77	122
21	Tivoli Station ..	3·82	5·09	1·19	·34	·69	10·81	7.19	5.57	27·70	8·36	16·78	11.41	98·95	Sept.	22nd	12·45	188
22	Lower Marli Estate ..	4·60	4·80	2·13	·95	1·74	7·97	5·95	5.86	17·51	8·28	15·40	7·67	82·86	Sept.	22nd	4·62	185
23	Mount Rodney Estate ..	5·40	5·48	—	—	—	7·65	8.56	..	...	...	..	...	27·09	July	8th	1·36	75
24	Upper Marli Estate ..	5·46	6·52	2·52	·67	1·74	10·33	8.93	7.37	20·60	8·50	16·26	7·95	96·85	Sept.	22nd	6·22	198
25	Plaisance Estate ..	13·25	9·40	3·30	·59	1·25	13·73	8.10	8.35	...	...	..	...	57·97	Jan.	7th	4·60	84
26	Samaritan Estate ..	6·71	8·17	3·26	·70	2·15	12·63	8.64	7.80	26·2	8·68	18·69	7·35	110·98	Sept.	22nd	8·60	255
27	Blair Athol Estate ..	6·33	7·51	2·78	·46	1·84	10·20	6.22	7.03	12·82	9·13	16·29	...	80·68	Sept.	21st	5 00	177
28	Crayfish Estate ..	6·55	7·98	2·27	1·12	2·45	11·50	13·28	6.92	22·53	8·74	19·32	7·51	110·17	Sept.	22nd	11·95	246
29	Dumfries Estate ..	2·01	1·46	—	—	2·20	4·85	5·60	3.14	7·34	6·90	...	..	33·50	July	2nd	2·07	65
30	Pomme Rose Estate ..	5·13	8·22	1·71	·81	1·25	11·99	9.20	5.82	13·65	10·04	15·59	9·39	92·80	Sept.	23rd	3·80	198
31	Belvidere Estate ..	12·21	14·64	4·37	3·30	4·55	15·62	16.08	12.41	31·79	22·30	..	26·16	163·43	Sept.	2?th	8·00	190
32	Brothers Estate ..	7·91	10·78	5·03	2·33	2·71	17·24	11.78	14.21	25·60	14·96	21·24	8·58	142·37	Sept.	22nd	12·05	273
33	Dougaldston Estate ..	5·91	9·60	4·62	2·12	2·56	17.83	14.06	15.82	8·36	14·46	21·67	7·50	124·51	Nov.	25th	4·42	242
34	Maran Cocoa Station ..	6·99	8·76	4·06	1·39	1·94	15·47	12.45	11.62	—	15·54	17·93	..	96·15	Nov.	16th	2·88	237
35	Mt. Felix Estate ..	10·66	17·27	5·04	3·98	5·11	19·26	18.12	11.93	—	...	...	..	91·37	Feb.	6th	3·80	150
36	Belair Park ..	1·94	1·02	·82	·26	2·85	4.29	4·23	4.72	—	...	...	..	20·13	May	26th	1·55	67
37	Botanic Gardens Carriacou ..	3·37	2·26	·90	—	—	—	—	...	—	...	...	..	6·53	Jan.	22nd	1·25	14
38	Limlair Station ..	2·36	1·20	·63	·19	1·77	5·04	4·84	2.81	26·20	6·25	11·37	2·30	64·96	Sept.	23rd	8·60	100
39	Harvey Vale Estate ..	2·03	—	·35	—	1·75	—	4.46	3.18	..	...	...	...	11·77	July	4th	2·00	49
40	Bailles Bacolet Estate ..	4·13	5·04	1·14	·41	·58	8·17	7.31	5.62	17·64	10·30	14·54	6·81	81·69	Sept.	22nd	7·38	159
41	St. Leonards Estate ..	—	—	—	·59	1·67	8·50	5.27	...	..	10·93							